A: Datasheet

Algorithm: cyberlink_005

Developer: Cyberlink Corp

Submission Date: 2022_01_07

Investigation:

Frontal mugshot ranking 52 (out of 329) –– FNIR(1600000, 0, 1) = 0.0018 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 44 (out of 291) –– FNIR(1600000, 0, 1) = 0.0107 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 46 (out of 260) –– FNIR(1600000, 0, 1) = 0.2092 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 24 (out of 218) –– FNIR(1600000, 0, 1) = 0.0023 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 56 (out of 215) –– FNIR(1600000, 0, 1) = 0.0984 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 39 (out of 329) –– FNIR(1600000, T, L+1) = 0.0099, FPIR=0.001000 vs. lowest 0.0017 from nec_005
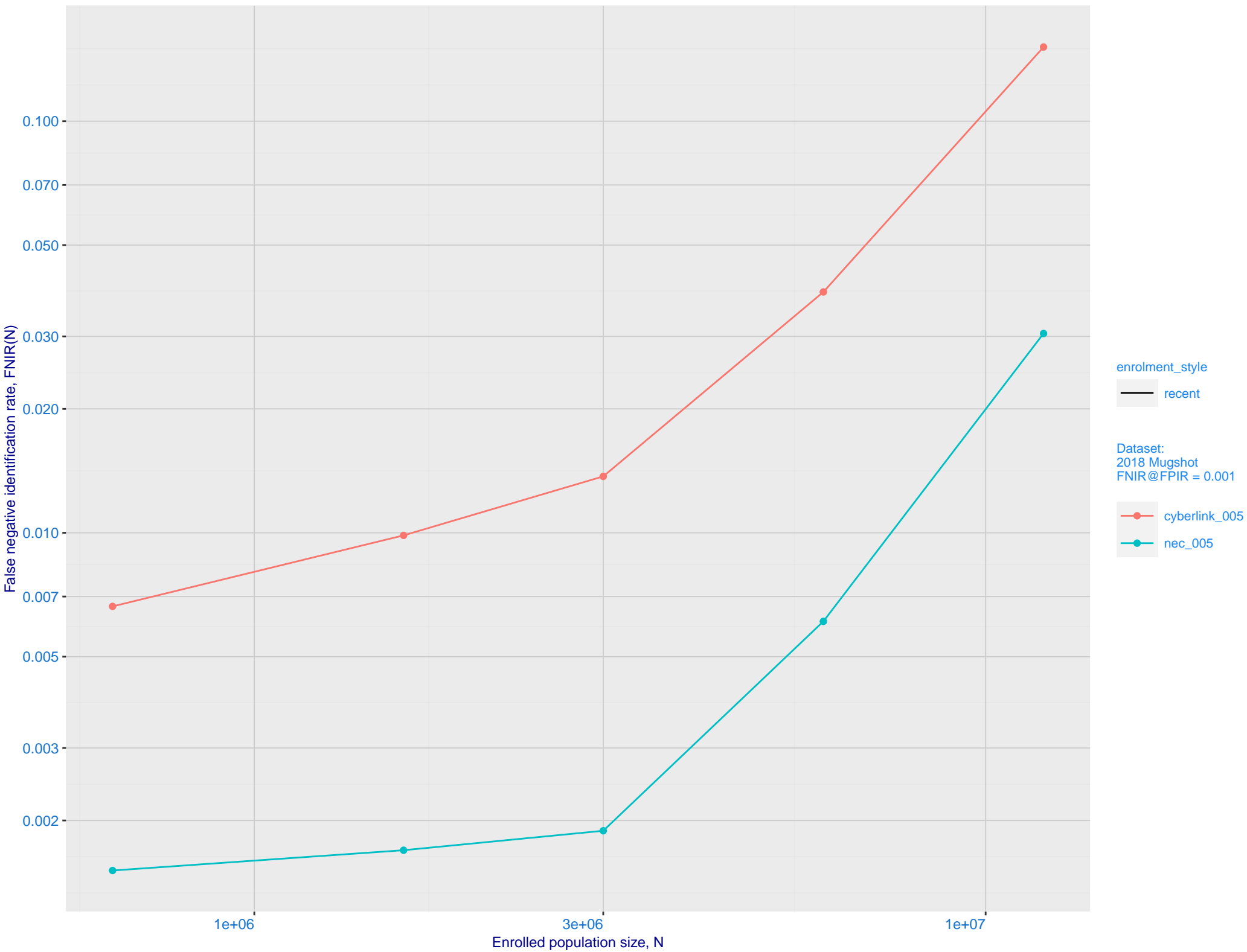
Mugshot webcam ranking 40 (out of 289) –– FNIR(1600000, T, L+1) = 0.0405, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 198 (out of 259) –– FNIR(1600000, T, L+1) = 0.9997, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000
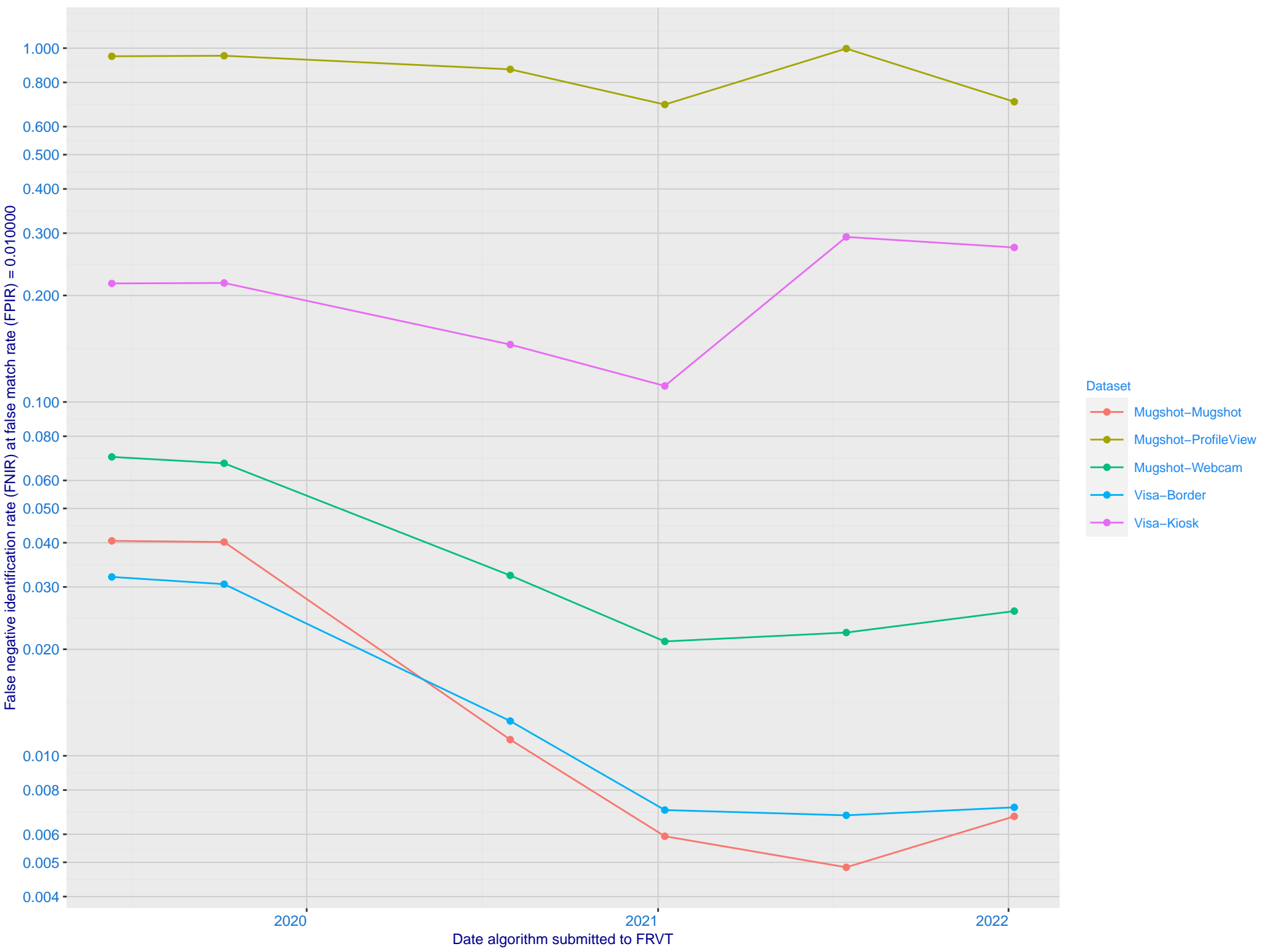
Immigration visa–border ranking 34 (out of 217) –– FNIR(1600000, T, L+1) = 0.0139, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa–kiosk ranking 163 (out of 212) –– FNIR(1600000, T, L+1) = 0.9302, FPIR=0.001000 vs. lowest 0.0728 from paravision_009
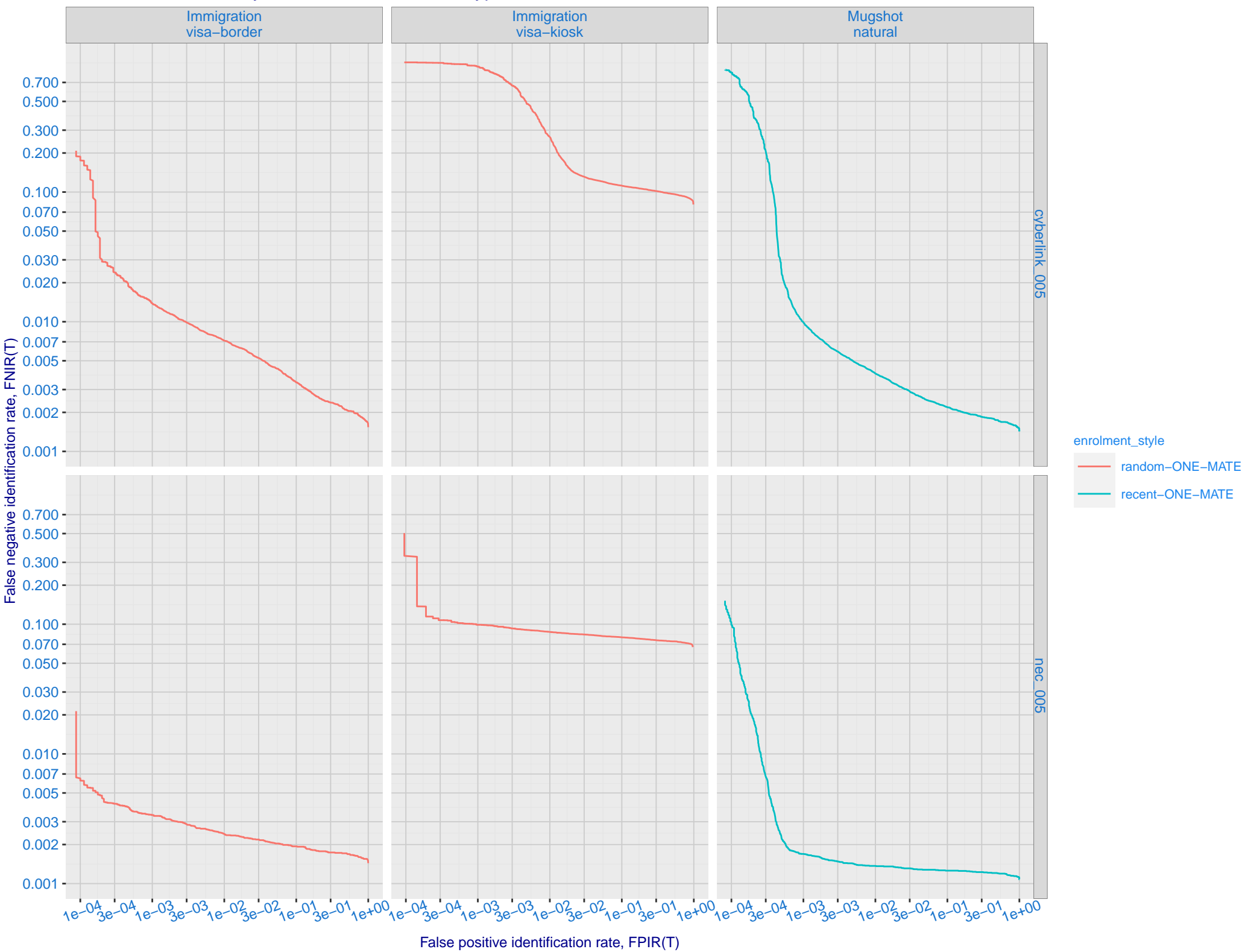
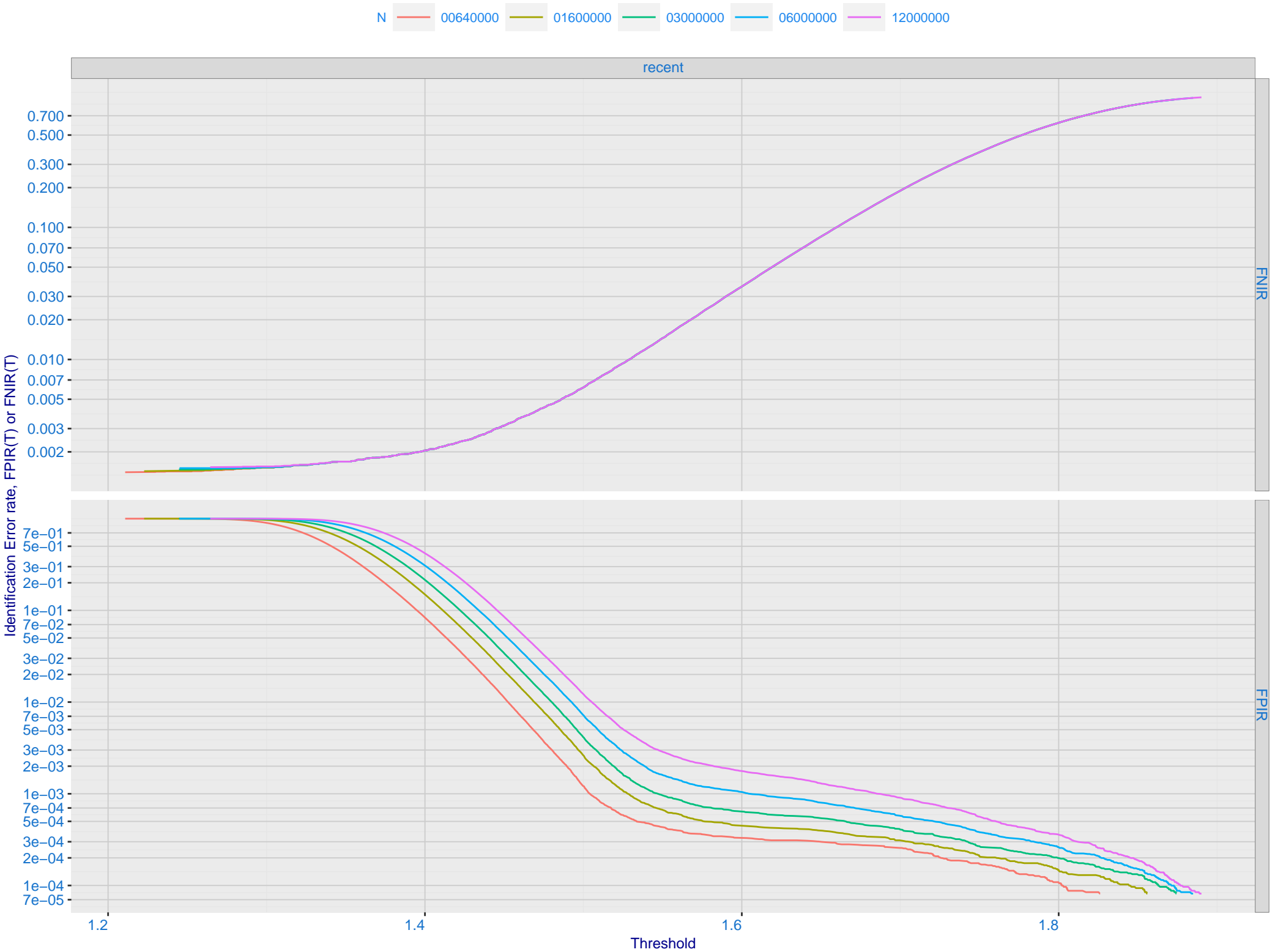B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_005)

C: Evolution of accuracy for CYBERLINK algorithms on three datasets 2018 – present

Dataset
- Mugshot–Mugshot
- Mugshot–ProfileView
- Mugshot–Webcam
- Visa–Border
- Visa–Kiosk

Date algorithm submitted to FRVT

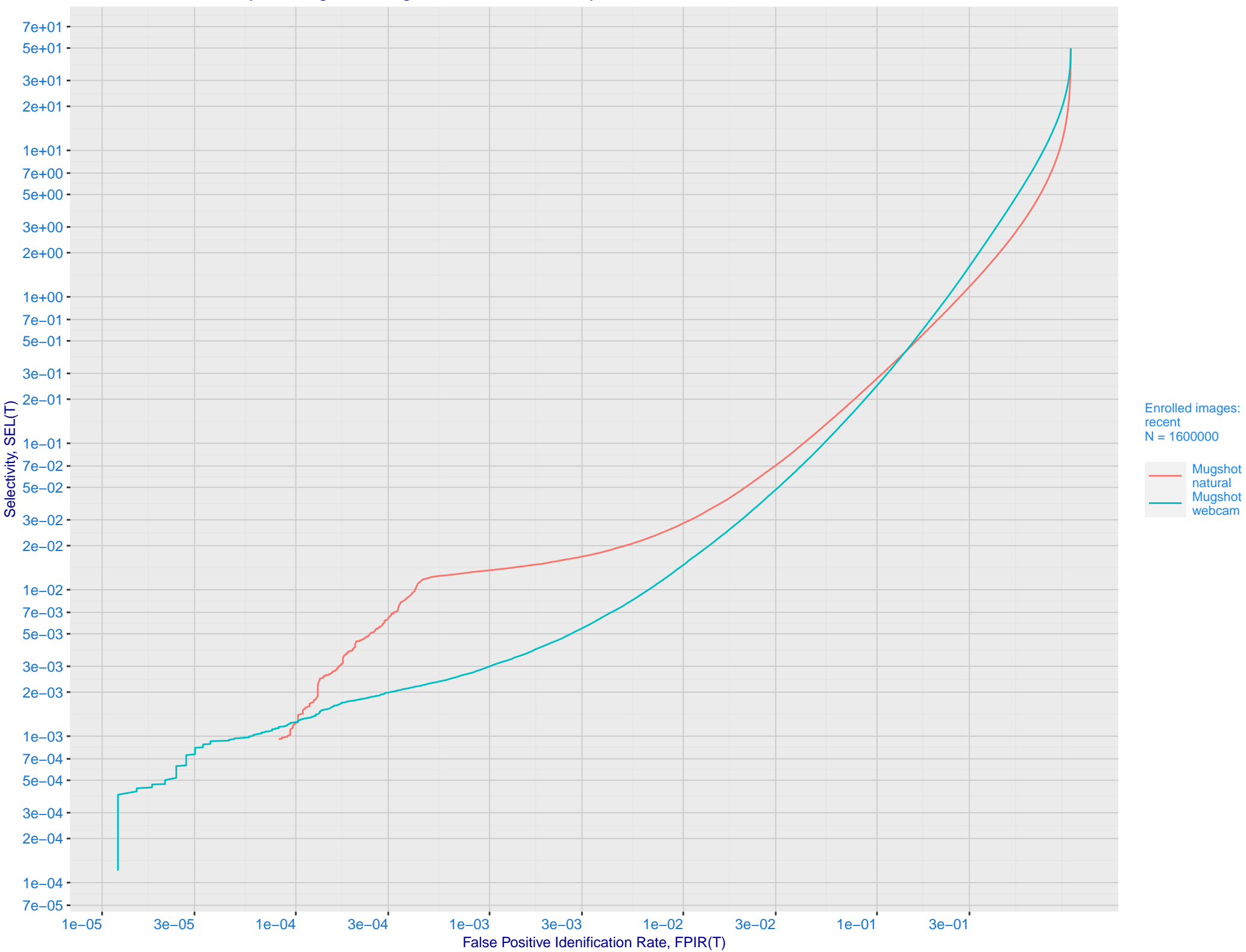*False negative identification rate (FNIR) at false match rate (FPIR) = 0.010000*

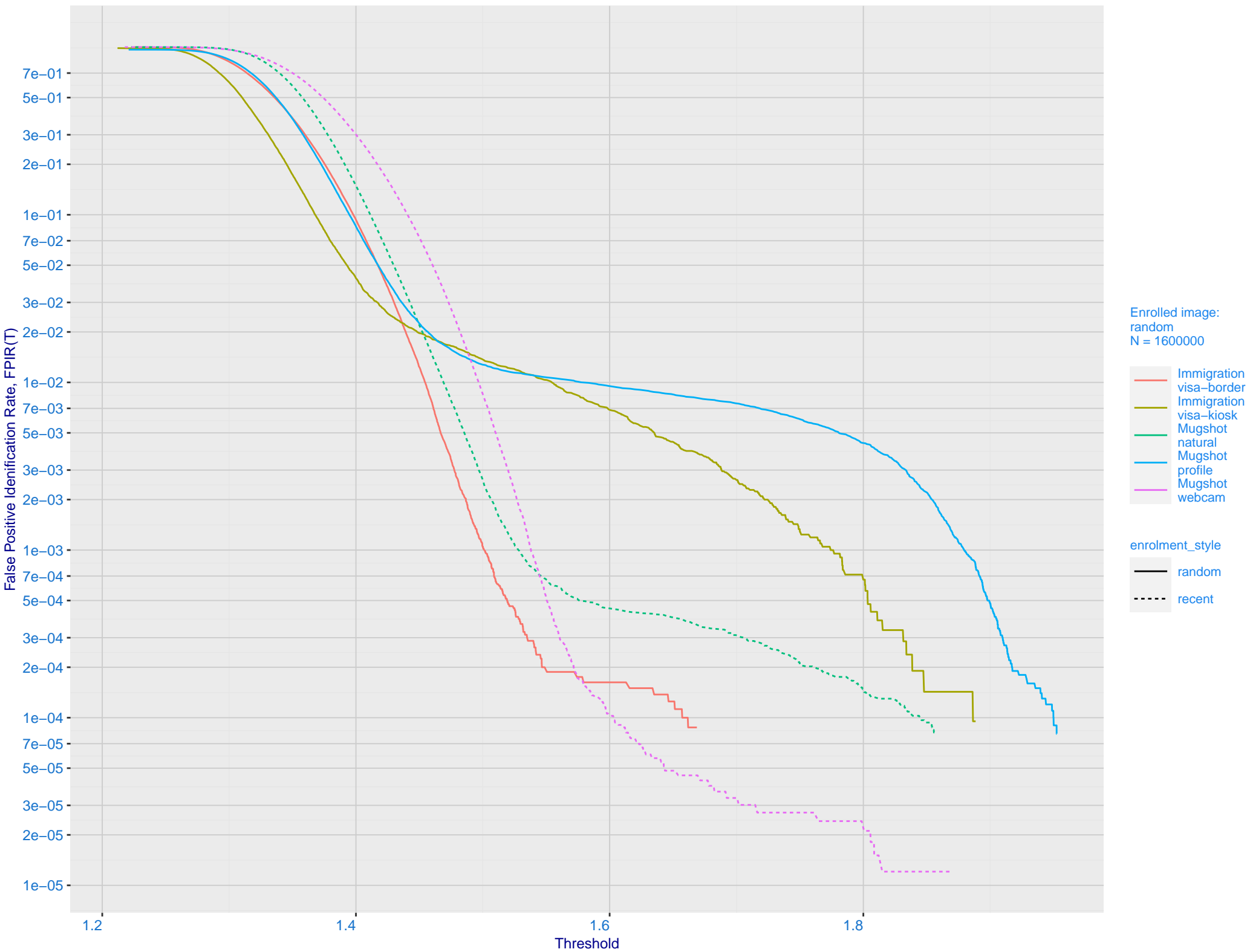D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
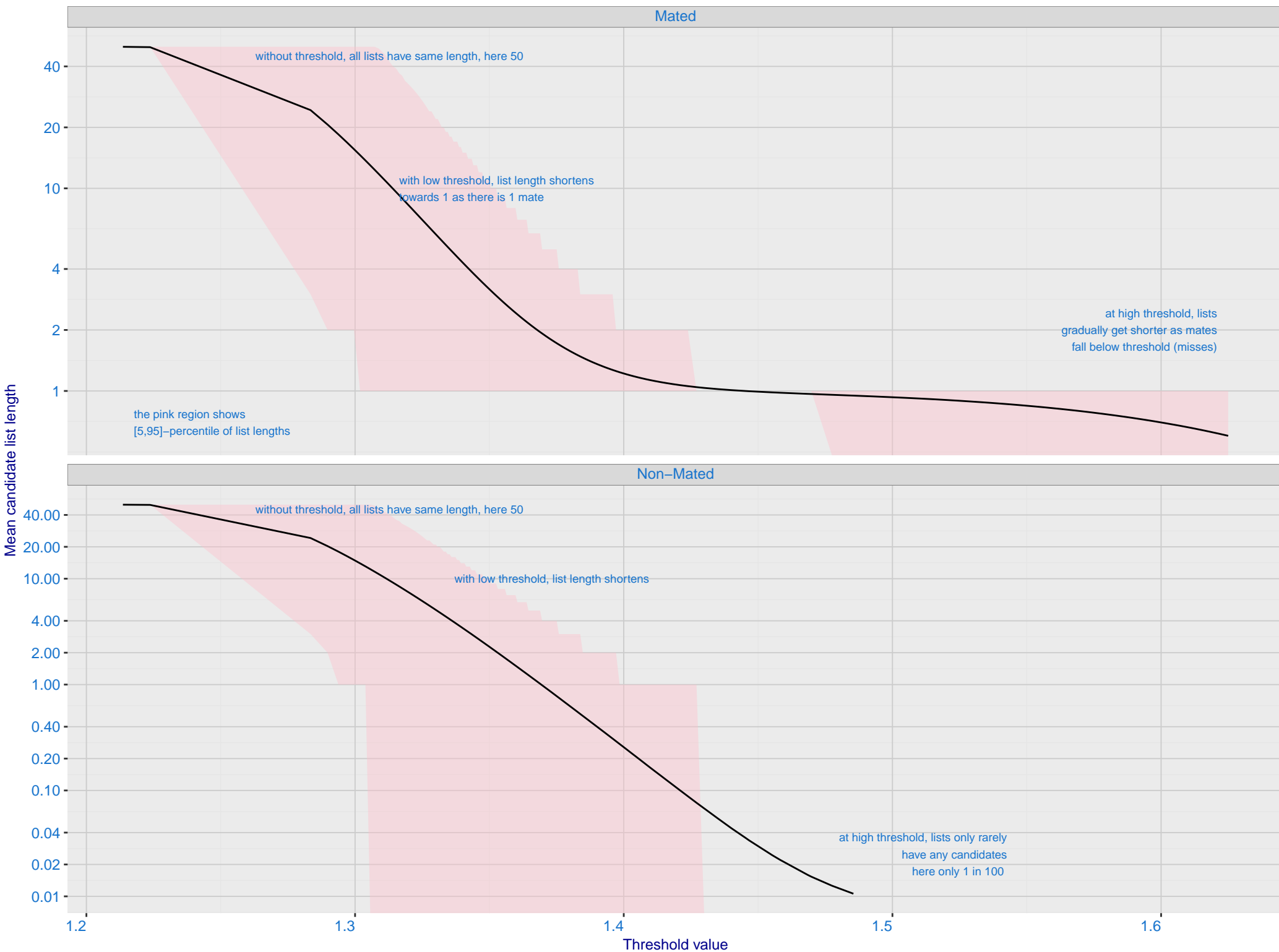
G: FPIR dependence on T by probe type for N = 1600000 subjects
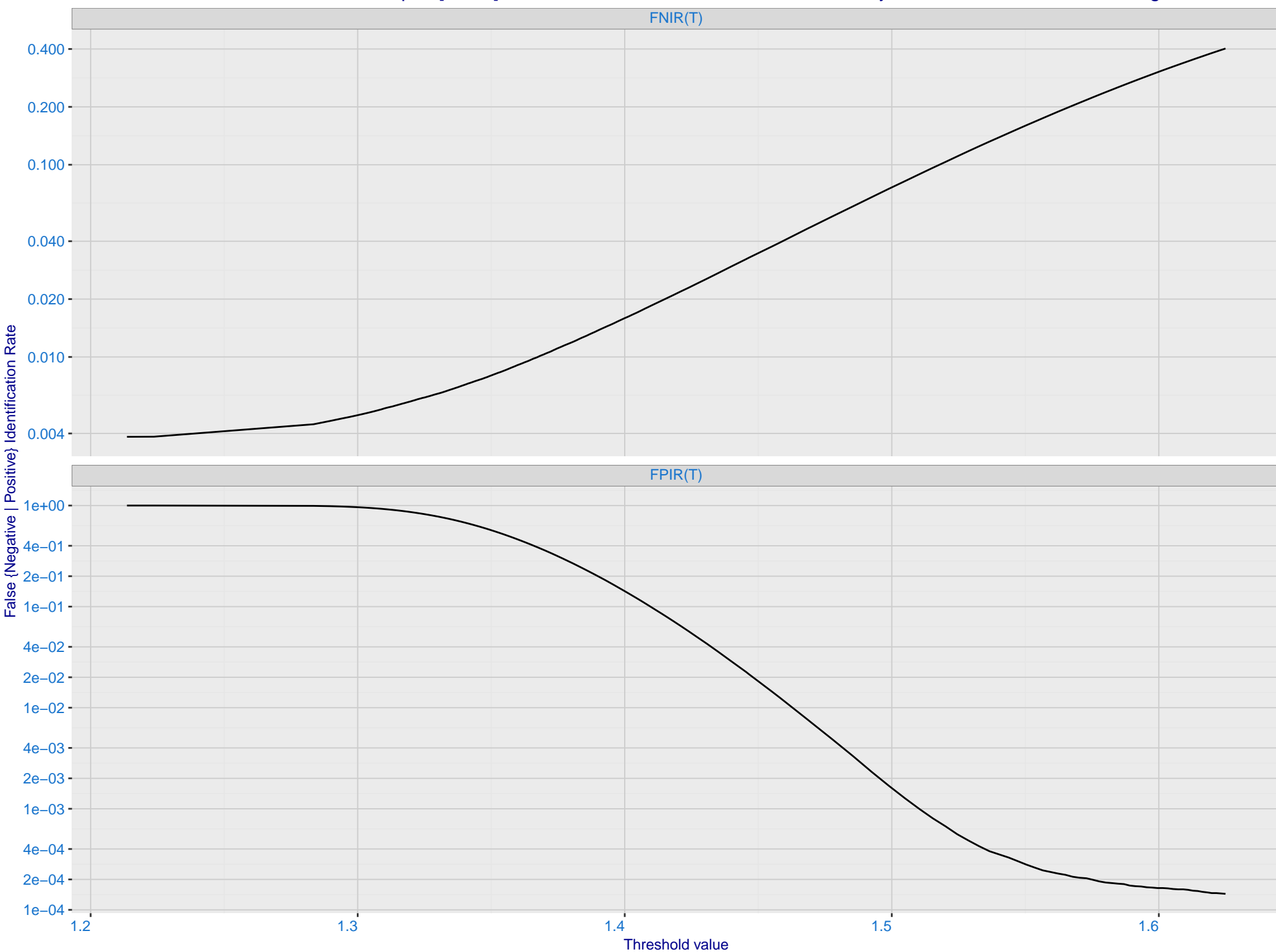
H: Reduced length candidate lists for human review
Dataset is border−border with time−lapse [10,15] YRS with N = 1600000. Probes are 10−15 years later than enrollment image

Mated

without threshold, all lists have same length, here 50

with low threshold, list length shortens towards 1 as there is 1 mate

at high threshold, lists gradually get shorter as mates fall below threshold (misses)

the pink region shows [5,95]−percentile of list lengths

Non−Mated

without threshold, all lists have same length, here 50

with low threshold, list length shortens

at high threshold, lists only rarely have any candidates here only 1 in 100
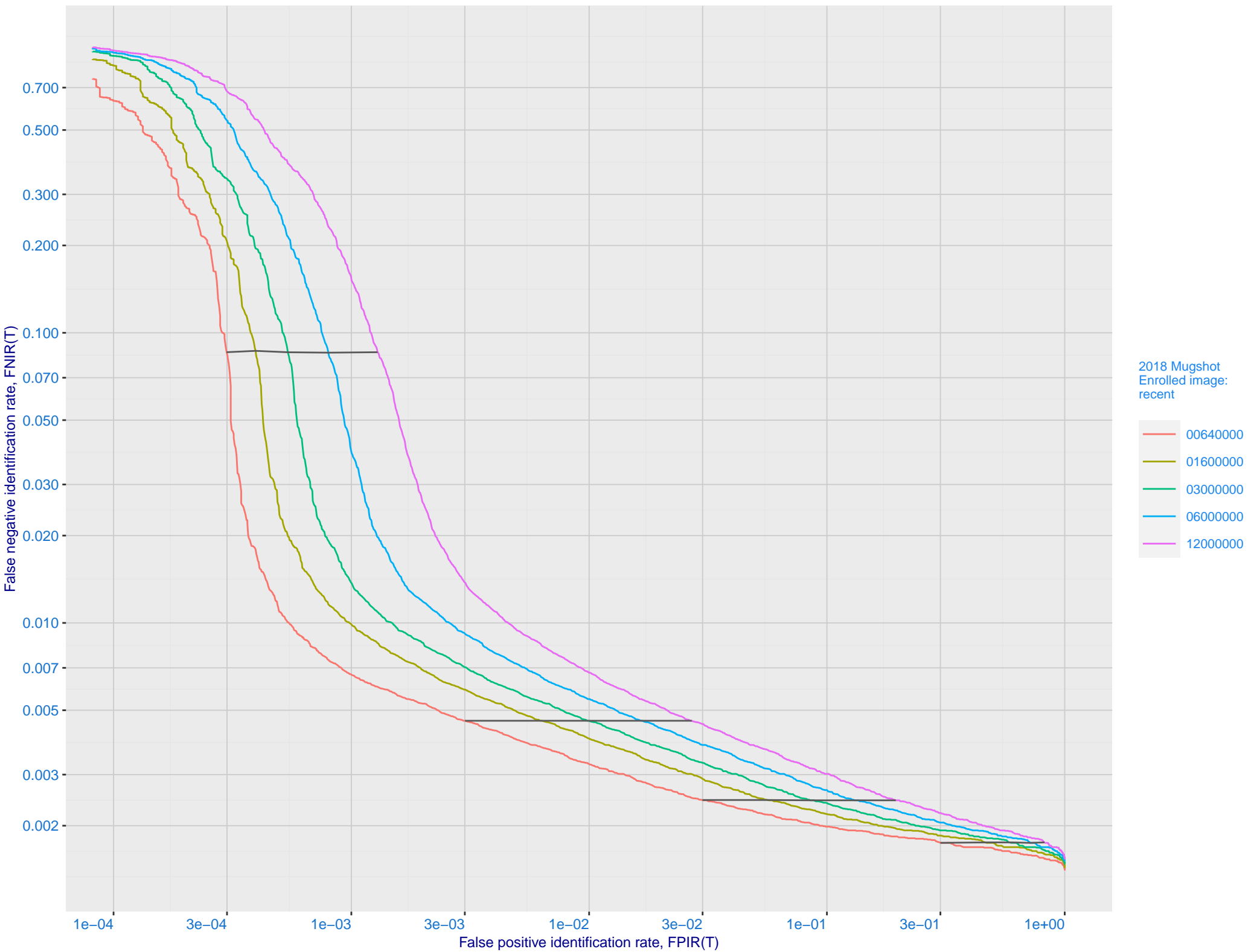
Mean candidate list length

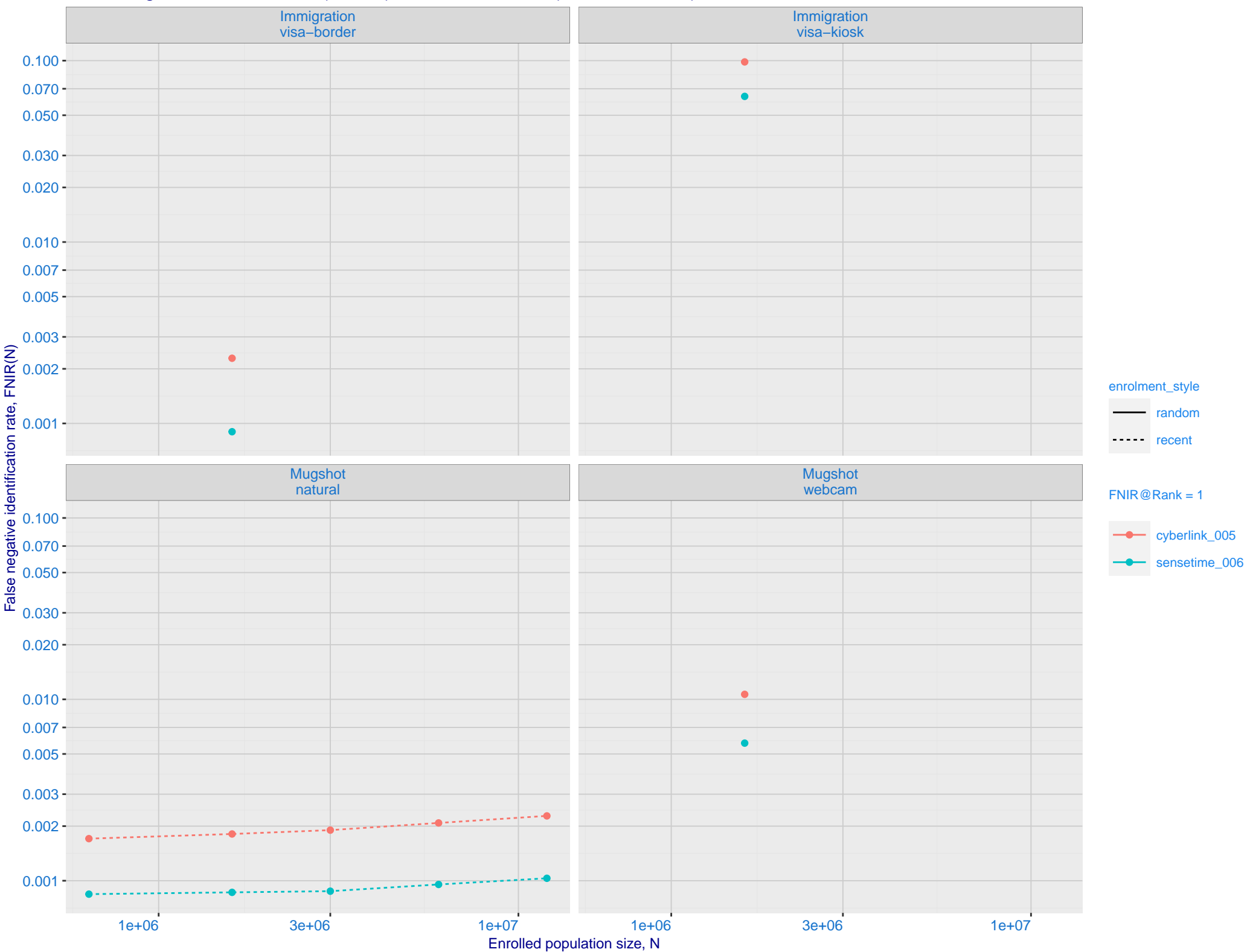Threshold value

I: FNIR and FPIR dependence on threshold
Dataset is border−border with time−lapse [10,15] YRS with N = 1600000. Probes are 10−15 years later than enrollment image
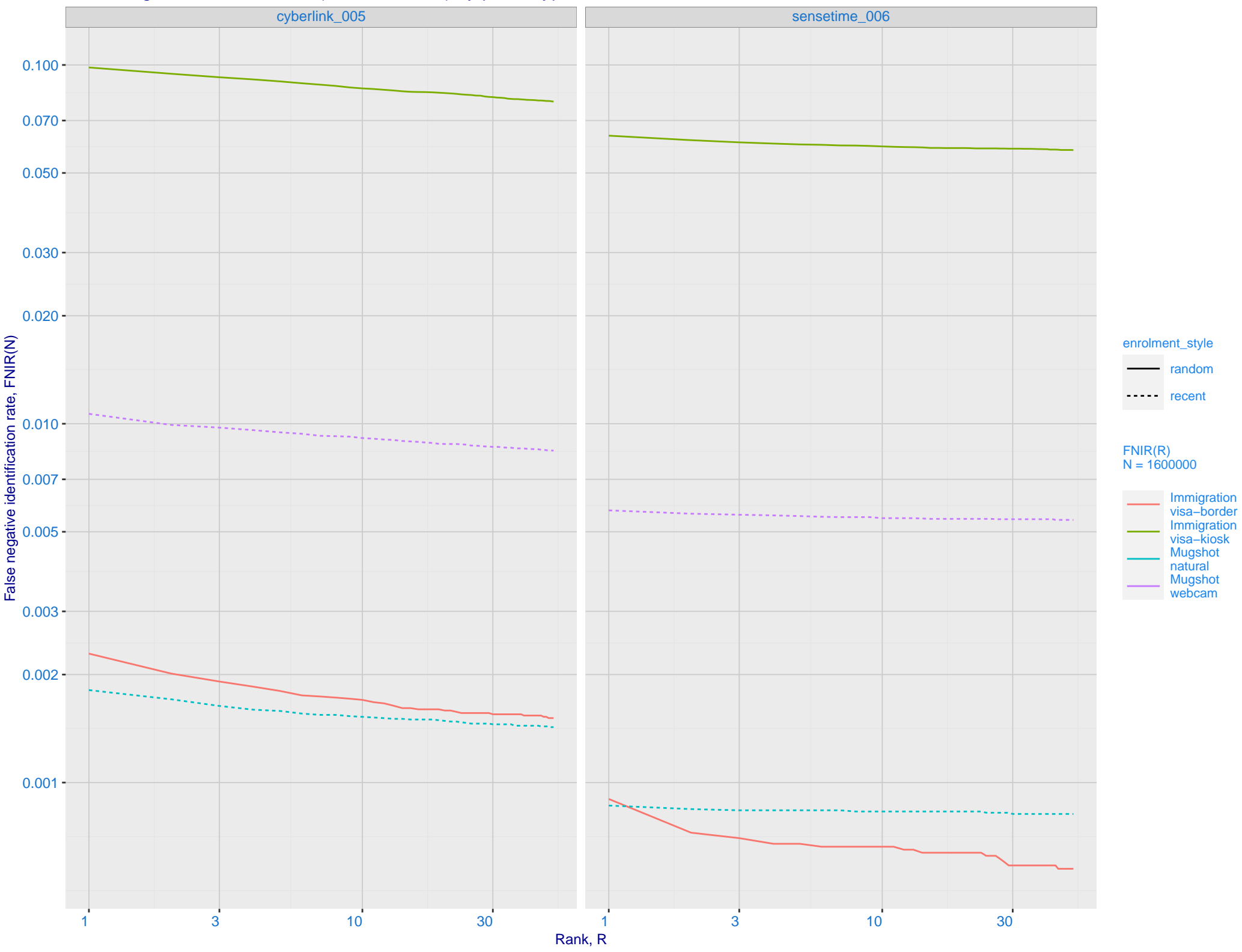
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.

K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)

L: Investigational mode: FNIR(1600000, R, 0) by probe type

M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements.
The template generation time is independent of N. The log and power−law models are fit to the first two (N,T) observations

Search Duration (milliseconds)
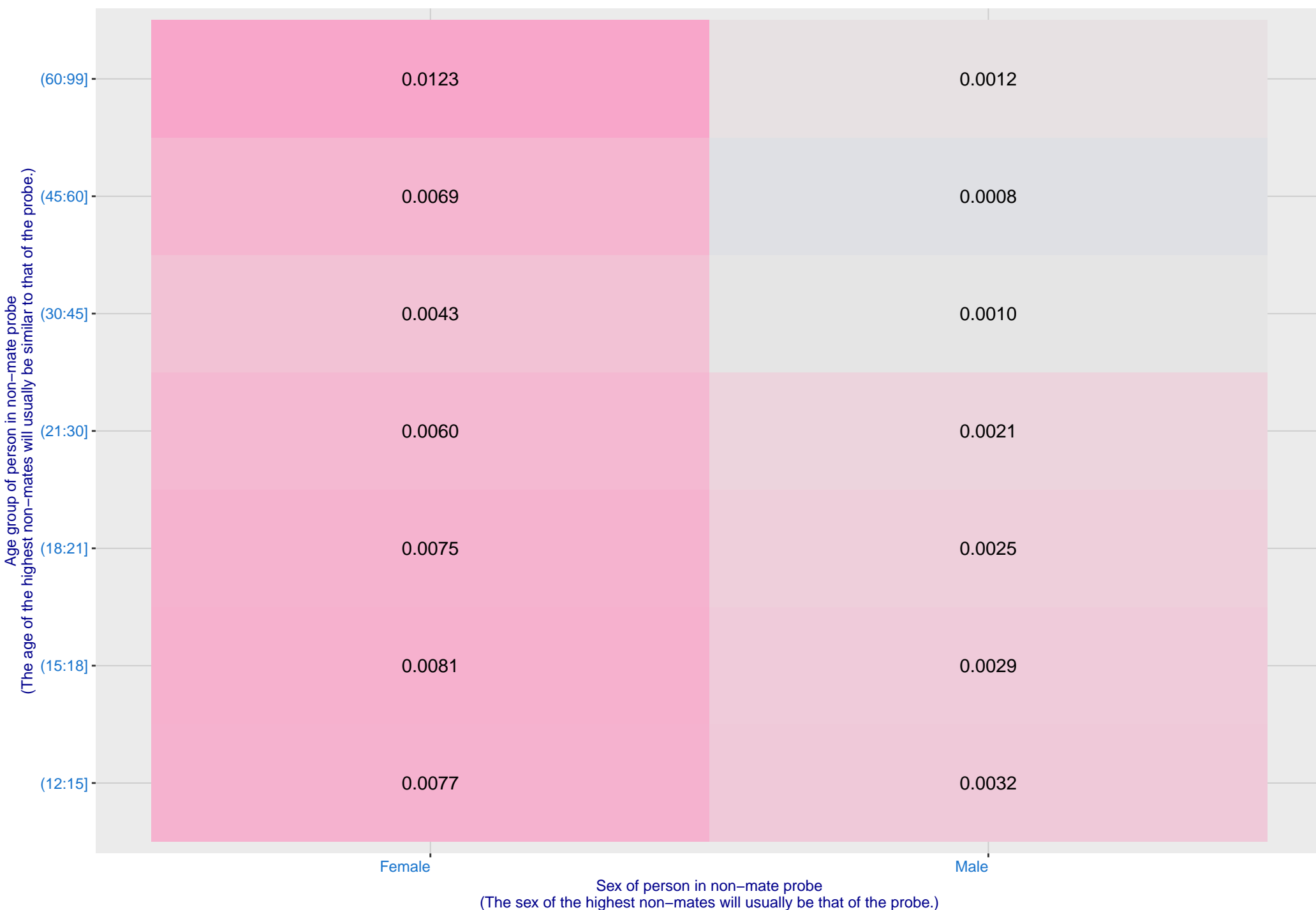
Enrolled population size, N, one image per person

O: FNIR(T, N = 1.6 million) by sex, age and time−lapse. The top row gives investigational rank−1 miss rates. The bottom panels give high threshold for more lights−out identification with low FPIR.

Algorithm: cyberlink_005, Dataset: Border−Crossing Ageing N = 1600000
Text encodes FNIR, Color encodes log(FNIR)

P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.

Algorithm: cyberlink_005, Dataset: Border−Crossing Ageing
Threshold: 1.478300 set to achive FPIR(30−45, Male) = 0.001

Color encodes log(FPIR)

−4   −3   −2   −1

Age group of person in non−mate probe
(The age of the highest non−mates will usually be similar to that of the probe.)

	Female	Male
(60:99]	0.0123	0.0012
(45:60]	0.0069	0.0008
(30:45]	0.0043	0.0010
(21:30]	0.0060	0.0021
(18:21]	0.0075	0.0025
(15:18]	0.0081	0.0029
(12:15]	0.0077	0.0032

Sex of person in non−mate probe
(The sex of the highest non−mates will usually be that of the probe.)

Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing